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CLAIMS

1. A wireless communication apparatus which has wireless communication means for communicating with a mobile wireless communication device and executes
5 predetermined processing on the basis of received information, characterized by comprising:

instructing means for instructing to start authentication processing in order to start communicating with a wireless communication device;

10 transmission means for transmitting a search signal containing verification data by the wireless communication means when a start of authentication is instructed by said instructing means; and

authentication means for, when a response signal
15 is received by the wireless communication means from one wireless communication device after the search signal is transmitted by said transmission means and when the verification data is contained in the response signal transmitting authentication information to the
20 wireless communication device.

2. A wireless communication apparatus which has wireless communication means for communicating with a mobile wireless communication device and executes
predetermined processing on the basis of received
25 information, characterized by comprising:

instructing means for instructing to start authentication processing in order to start

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communicating with a wireless communication device;

transmission means for transmitting a search signal containing response time interval data by the wireless communication means when a start of

5 authentication is instructed by said instructing means; and

authentication means for, when a response signal is received by the wireless communication means from one wireless communication device at the response time
10 intervals after the search signal is transmitted by said transmission means, transmitting authentication information to the wireless communication device.

3. A wireless communication apparatus which has wireless communication means for communicating with a
15 mobile wireless communication device and executes predetermined processing on the basis of received information, characterized by comprising:

detection means for detecting an intensity of a signal received by the wireless communication means;

20 instructing means for instructing to start authentication processing in order to start communicating with a wireless communication device;

transmission means for transmitting a predetermined search signal by using the wireless
25 communication means when a start of authentication is instructed by said instructing means; and

authentication means for, when a response signal

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is received by the wireless communication means from one wireless communication device a plurality of number of times after the search signal is transmitted by said transmission means and when an absolute value of a reception intensity difference between the response signals is larger than a predetermined threshold T_1 and less than a predetermined threshold T_2 ($T_2 > T_1 > 0$), transmitting authentication information to the wireless communication device.

4. A wireless communication apparatus which has wireless communication means for communicating with a mobile wireless communication device and executes predetermined processing on the basis of received information, characterized by comprising:

15 instructing means for instructing to start authentication processing in order to start communicating with a wireless communication device;

 setting means for setting an authentication area narrower than a communicative area after authentication with respect to the wireless communication means when a start of authentication is instructed by said instructing means;

 transmission means for transmitting a predetermined search signal by the wireless communication means after the authentication area is set by said setting means; and

 authentication means for, when a response signal

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is received by the wireless communication means from one wireless communication device after the search signal is transmitted from said transmitting means, transmitting authentication information to the wireless communication device.

5. A wireless communication apparatus which communicates with a mobile wireless communication device and executes predetermined processing, characterized by comprising:

10 wireless communication means for switching a normal mode based on authentication information and an authentication mode of performing communication in an authentication area range narrower than an area range in the normal mode;

15 detection means for detecting an intensity of a signal received by the wireless communication means;

instructing means for instructing to start authentication processing in order to start communicating with a wireless communication device;

20 transmission means for setting the wireless communication means in the authentication mode and transmitting a search signal containing verification data and response time interval data when a start of authentication is instructed by said instructing means;

25 and

authentication means for, when the response signal containing the verification data is received by

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the wireless communication means from one wireless communication device at the response time intervals after the search signal is transmitted from said transmission means and when an absolute value of a reception intensity difference between the response signals detected by said detection means is larger than a predetermined threshold T1 and less than a predetermined threshold T2 ($T2 > T1 > 0$), transmitting authentication information to the wireless communication device.

6. An electronic device including wireless communication means for communicating with a predetermined wireless communication apparatus and transmitting information of a processing target, characterized by comprising:

instructing means for instructing to start authentication processing in order to start communicating with a wireless communication apparatus;

first reception means for receiving a search signal by the wireless communication means when a start of authentication is instructed by said instructing means;

transmission means for transmitting a response signal containing verification data contained in received search information through the wireless communication means; and

second reception means for receiving

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authentication information through the wireless communication means after transmission is performed by said transmission means,

wherein when authentication information is received by said second reception means, communication is subsequently performed with the wireless communication apparatus on the basis of the authentication information.

7. An electronic device including wireless communication means for communicating with a predetermined wireless communication apparatus and transmitting information of a processing target, characterized by comprising:

instructing means for instructing to start authentication processing in order to start communicating with a wireless communication device;

setting means for setting an authentication area narrower than a communicative area after authentication with respect to the wireless communication means when a start of authentication is instructed by said instructing means;

first reception means for receiving a predetermined search signal by the wireless communication means after the authentication area is set by said setting means;

transmission means for transmitting a response signal through the wireless communication means in

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accordance with reception by said first reception means; and

second reception means for receiving authentication information through the wireless communication means after transmission by said transmission means,

wherein when authentication information is received by said second reception means, communication is subsequently performed with the wireless communication apparatus on the basis of the authentication information.

8. An electronic device including wireless communication means for communicating with a predetermined wireless communication apparatus and transmitting information of a processing target, characterized by comprising:

instructing means for instructing to start authentication processing in order to start communicating with a wireless communication device;

setting means for setting an authentication area narrower than a communicative area after authentication with respect to the wireless communication means when a start of authentication is instructed by said instructing means;

first reception means for receiving a predetermined search signal by the wireless communication means after the authentication area is

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set by said setting means;

transmission means for transmitting a response
signal, containing verification data contained in
received search information, through the wireless
5 communication means at time intervals based on time
interval instruction information contained in the
search information; and

second reception means for receiving
authentication information through the wireless
10 communication means after transmission by said
transmission means,

wherein when authentication information is
received by said second reception means, communication
is subsequently performed with the wireless
15 communication apparatus on the basis of the
authentication information.

9. A control method for a wireless communication
apparatus which has wireless communication means for
communicating with a mobile wireless communication
20 device and executes predetermined processing on the
basis of received information, characterized by
comprising:

an instructing step of instructing to start
authentication processing in order to start
25 communicating with a wireless communication device;

a transmission step of transmitting a search
signal containing verification data by the wireless

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communication means when a start of authentication is instructed in the instructing step; and

an authentication step of, when a response signal is received by the wireless communication means from one wireless communication device after the search signal is transmitted in the transmission step and when the verification data is contained in the response signal transmitting authentication information to the wireless communication device.

10 10. A control method for a wireless communication apparatus which has wireless communication means for communicating with a mobile wireless communication device and executes predetermined processing on the basis of received information, characterized by comprising:

an instructing step of instructing to start authentication processing in order to start communicating with a wireless communication device;

a transmission step of transmitting a search signal containing response time interval data by the wireless communication means when a start of authentication is instructed in the instructing step; and

an authentication step of, when a response signal is received by the wireless communication means from one wireless communication device at the response time intervals after the search signal is transmitted in the

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transmission step, transmitting authentication information to the wireless communication device.

11. A control method for a wireless communication apparatus which has wireless communication means for communicating with a mobile wireless communication device and executes predetermined processing on the basis of received information, characterized by comprising:

a detection step of detecting an intensity of a signal received by the wireless communication means;

an instructing step of instructing to start authentication processing in order to start communicating with a wireless communication device;

a transmission step of transmitting a predetermined search signal by using the wireless communication means when a start of authentication is instructed in the instructing step; and

an authentication step of, when a response signal is received by the wireless communication means from one wireless communication device a plurality of number of times after the search signal is transmitted in the transmission step and when an absolute value of a reception intensity difference between the response signals is larger than a predetermined threshold T_1 and less than a predetermined threshold T_2 ($T_2 > T_1 > 0$), transmitting authentication information to the wireless communication device.

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12. A control method for a wireless communication apparatus which has wireless communication means for communicating with a mobile wireless communication device and executes predetermined processing on the basis of received information, characterized by comprising:

- an instructing step of instructing to start authentication processing in order to start communicating with a wireless communication device;
- 10 a setting step of setting an authentication area narrower than a communicative area after authentication with respect to the wireless communication means when a start of authentication is instructed in the instructing step;
- 15 a transmission step of transmitting a predetermined search signal by the wireless communication means after the authentication area is set in the setting step; and
- an authentication step of, when a response signal is received by the wireless communication means from one wireless communication device after the search signal is transmitted in the transmitting step, transmitting authentication information to the wireless communication device.
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- 25 13. A control method for a wireless communication apparatus which communicates with a mobile wireless communication device and executes predetermined

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processing, characterized by comprising:

a wireless communication switching step of switching predetermined wireless communication means between a normal mode based on authentication

5 information and an authentication mode of performing communication in an authentication area range narrower than an area range in the normal mode;

a detection step of detecting an intensity of a signal received by the wireless communication means;

10 an instructing step of instructing to start authentication processing in order to start communicating with a wireless communication device;

a transmission step of setting the wireless communication means in the authentication mode and
15 transmitting a search signal containing verification data and response time interval data when a start of authentication is instructed in the instructing step;
and

an authentication step of, when the response
20 signal containing the verification data is received by the wireless communication means from one wireless communication device at the response time intervals after the search signal is transmitted in the transmission step and when an absolute value of a
25 reception intensity difference between the response signals detected in the detection step is larger than a predetermined threshold T1 and less than a

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predetermined threshold T_2 ($T_2 > T_1 > 0$), transmitting authentication information to the wireless communication device.

14. A control method for an electronic device
5 including wireless communication means for communicating with a predetermined wireless communication apparatus and transmitting information of a processing target, characterized by comprising:

an instructing step of instructing to start
10 authentication processing in order to start communicating with a wireless communication apparatus;

a first reception step of receiving a search
signal by the wireless communication means when a start
of authentication is instructed in the instructing
15 step;

a transmission step of transmitting a response
signal containing verification data contained in
received search information through the wireless
communication means; and

20 a second reception step of receiving authentication information through the wireless communication means after transmission is performed in the transmission step,

wherein when authentication information is
25 received in the second reception step, communication is subsequently performed with the wireless communication apparatus on the basis of the authentication

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information.

15. A control method for an electronic device including wireless communication means for communicating with a predetermined wireless

5 communication apparatus and transmitting information of a processing target, characterized by comprising:

an instructing step of instructing to start authentication processing in order to start communicating with a wireless communication apparatus;

10 a setting step of setting an authentication area narrower than a communicative area after authentication with respect to the wireless communication means when a start of authentication is instructed in the instructing step;

15 a first reception step of receiving a predetermined search signal by the wireless communication means after the authentication area is set in the setting step;

a transmission step of transmitting a response
20 signal through the wireless communication means in accordance with reception in the first reception step;
and

a second reception step of receiving authentication information through the wireless
25 communication means after transmission in the transmission step,

wherein when authentication information is

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received in the second reception step, communication is subsequently performed with the wireless communication apparatus on the basis of the authentication information.

5 16. A control method for an electronic device including wireless communication means for communicating with a predetermined wireless communication apparatus and transmitting information of a processing target, characterized by comprising:

10 an instructing step of instructing to start authentication processing in order to start communicating with a wireless communication apparatus;
a setting step of setting an authentication area narrower than a communicative area after authentication
15 with respect to the wireless communication means when a start of authentication is instructed in the instructing step;

a first reception step of receiving a predetermined search signal by the wireless
20 communication means after the authentication area is set in the setting step;

a transmission step of transmitting a response signal, containing verification data contained in received search information, through the wireless
25 communication means at time intervals based on time interval instruction information contained in the search information; and

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a second reception step of receiving authentication information through the wireless communication means after transmission in the transmission step,

5 wherein when authentication information is received in the second reception step, communication is subsequently performed with the wireless communication apparatus on the basis of the authentication information.

10 17. A computer program for a wireless communication apparatus which communicates with a mobile wireless communication device and executes predetermined processing, characterized by serving as:

 wireless communication means for switching a
15 normal mode based on authentication information and an authentication mode of performing communication in an authentication area range narrower than an area range in the normal mode;

 detection means for detecting an intensity of a
20 signal received by the wireless communication means;

 instructing means for instructing to start authentication processing in order to start communicating with a wireless communication device;

 transmission means for setting the wireless
25 communication means in the authentication mode and transmitting a search signal containing verification data and response time interval data when a start of

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authentication is instructed by the instructing means;
and

authentication means for, when the response
signal containing the verification data is received by
5 the wireless communication means from one wireless
communication device at the response time intervals
after the search signal is transmitted from the
transmission means and when an absolute value of a
reception intensity difference between the response
10 signals detected by the detection means is larger than
a predetermined threshold T1 and less than a
predetermined threshold T2 ($T2 > T1 > 0$), transmitting
authentication information to the wireless
communication device.

15 18. A computer program for an electronic device
including wireless communication means for
communicating with a predetermined wireless
communication apparatus and transmitting information of
a processing target, characterized by serving as:

20 instructing means for instructing to start
authentication processing in order to start
communicating with a wireless communication device;

setting means for setting an authentication area
narrower than a communicative area after authentication
25 with respect to the wireless communication means when a
start of authentication is instructed by the
instructing means;

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first reception means for receiving a predetermined search signal by the wireless communication means after the authentication area is set by the setting means;

5 transmission means for transmitting a response signal containing verification data contained in received search information through the wireless communication means at time intervals based on time interval instruction information contained in the
10 search information; and

second reception means for receiving authentication information through the wireless communication means after transmission by the transmission means,

15 wherein when authentication information is received by the second reception means, communication is subsequently performed with the wireless communication apparatus on the basis of the authentication information.

20 19. A computer-readable storage medium characterized by storing a computer program defined in claim 17 or 18.